

GCOM-W1 Status

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¹ GCOM Project Team

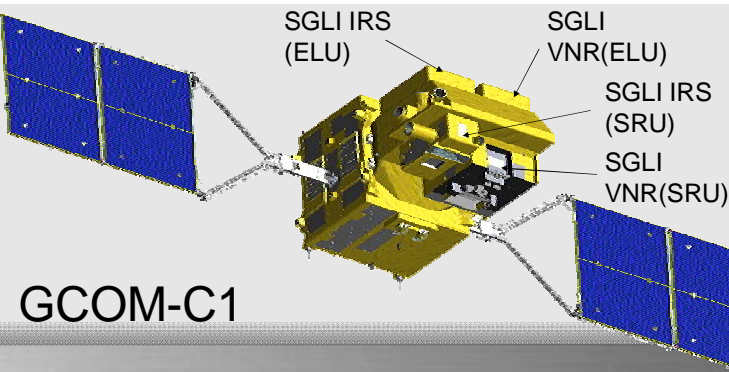
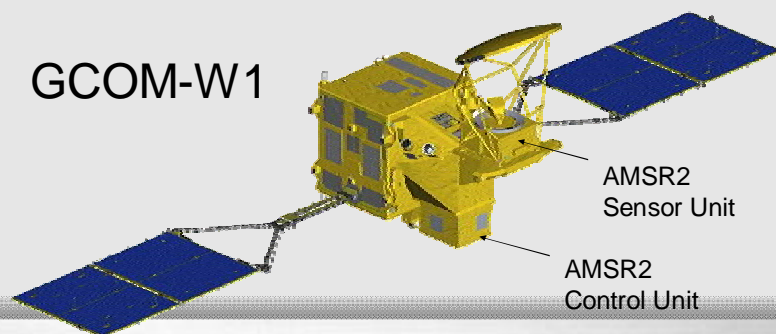
² Earth Observation Research Center (EORC)
Japan Aerospace Exploration Agency (JAXA)

June 29, 2011
NCDC, Asheville

GCOM 1st Generation Satellites

	GCOM-W1	GCOM-C1
Orbit	Sun synchronous sub-recurrent orbit	
Recurrence cycle	16 days	34 days
Altitude	700 km	798 km
Inclination	98.2 deg	98.6 deg
Local sun time of descending node	1:30	10:30
mass	<1,991kg	< 2,100kg
power	> 3,880W	> 4,000W
Mission instrument	Advanced microwave scanning radiometer 2 (AMSR2)	Second-generation global imager (SGLI)
Design life	5 years	

GCOM-W1



GCOM-C1

Overview of AMSR2



- Deployable main reflector system with 2.0m diameter (1.6m for AMSR-E).
- Frequency channel set is identical to that of AMSR-E except 7.3GHz channel for RFI mitigation.
- Two-point external calibration with improved HTS (hot-load).
- Deep space calibration maneuver to check consistency between main reflector and CSM.
- Add a redundant momentum wheel to increase reliability.

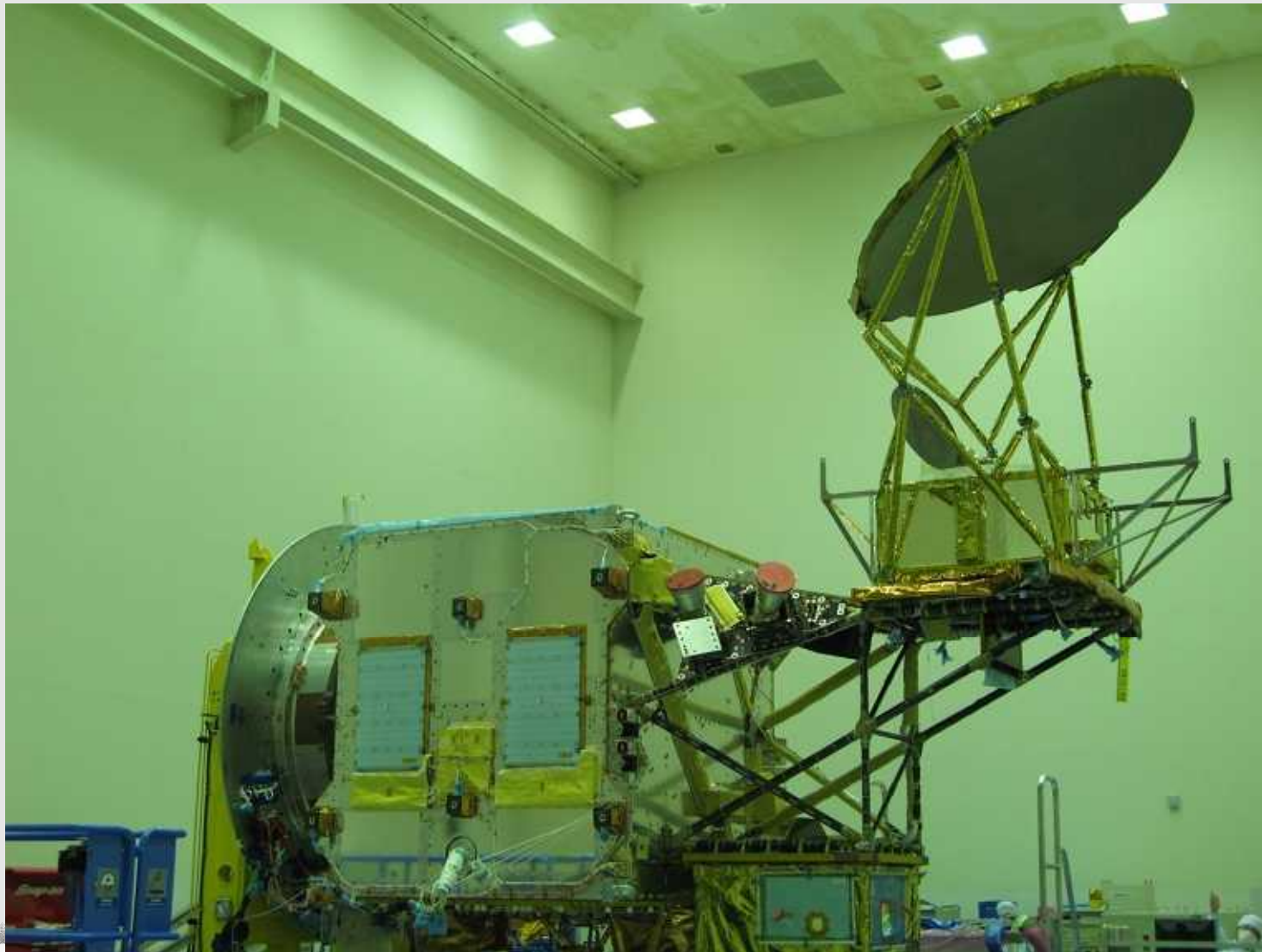
GCOM-W1/AMSR2 characteristics	
Scan and rate	Conical scan at 40 rpm
Antenna	Offset parabola with 2.0m dia.
Swath width	1450km
Incidence angle	Nominal 55 degrees
Digitization	12bits
Dynamic range	2.7-340K
Polarization	Vertical and horizontal

AMSR2 Channel Set				
Center Freq. [GHz]	Band width [MHz]	Pol.	Beam width [deg] (Ground res. [km])	Sampling interval [km]
6.925/7.3	350	V and H	1.8 (35 x 62)	10
10.65	100		1.2 (24 x 42)	
18.7	200		0.65 (14 x 22)	
23.8	400		0.75 (15 x 26)	
36.5	1000		0.35 (7 x 12)	5
89.0	3000		0.15 (3 x 5)	

GCOM-W1 Progress

- The system PFT started in August 2010. The electrical performance test, EMC test and Mechanical environmental test were over in February, 2011.
- The earthquake occurred on March 11th, 2011 when preparation of thermal vacuum test was performed. Some parts of the walls in the test facility were broken down and the satellite was covered with the dust.
- It took one month that another test facility (anechoic chamber) restored. GCOM-W1 moved to this facility and made cleaning and test. At the week of June 13th, the satellite came back to the same configuration as before the earthquake.
- The end-to-end test including satellite and ground system was performed from June 22nd to 24th.

Present GCOM-W1 Feature

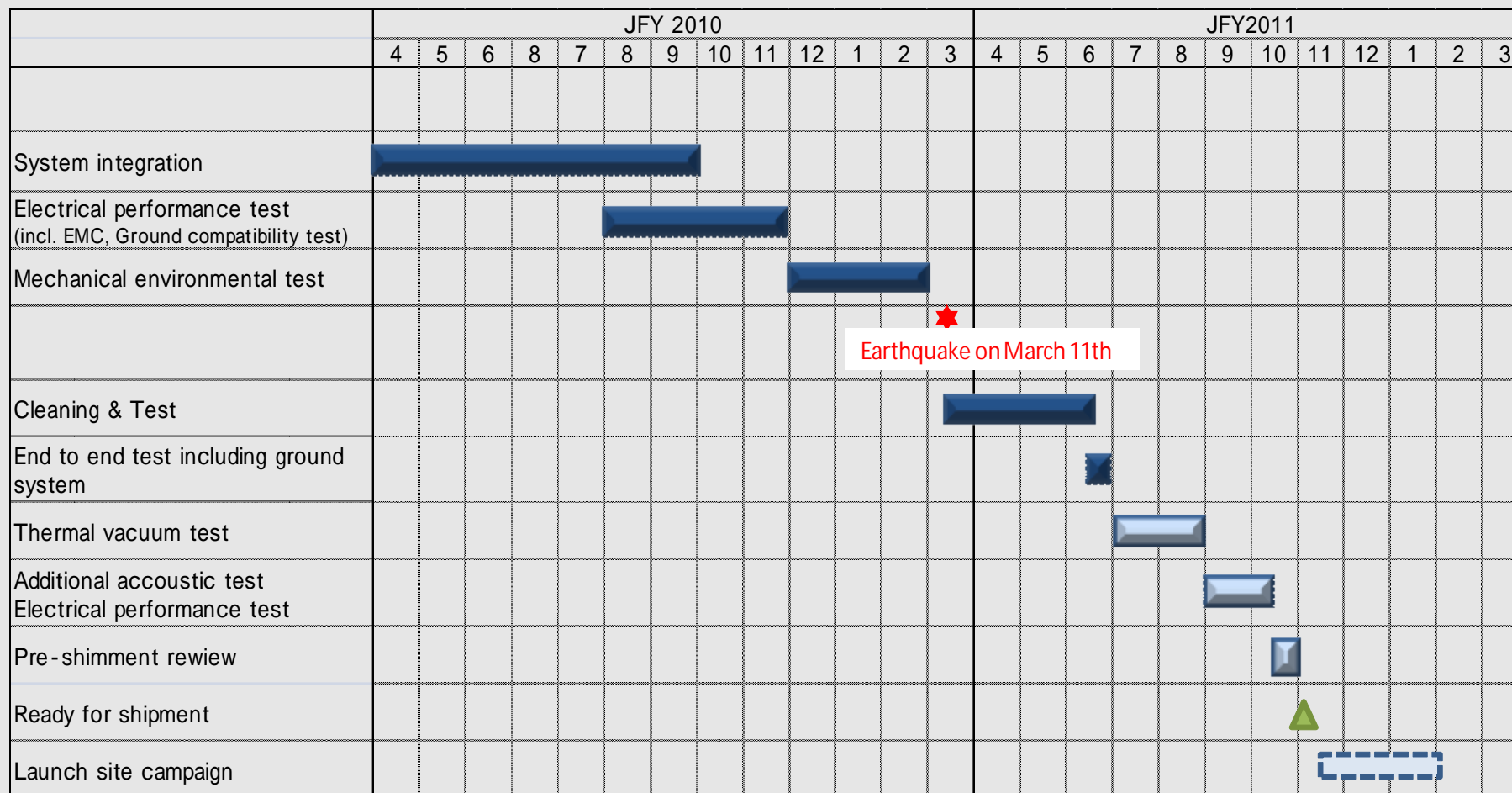


June 13th

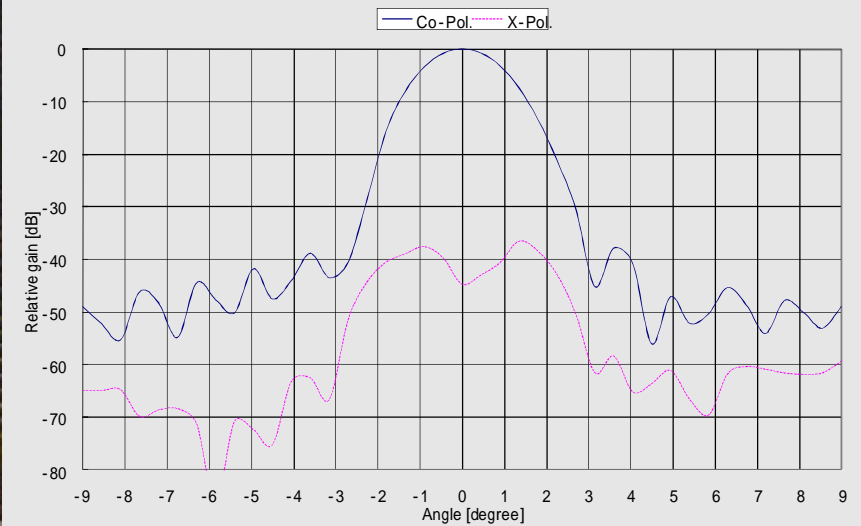
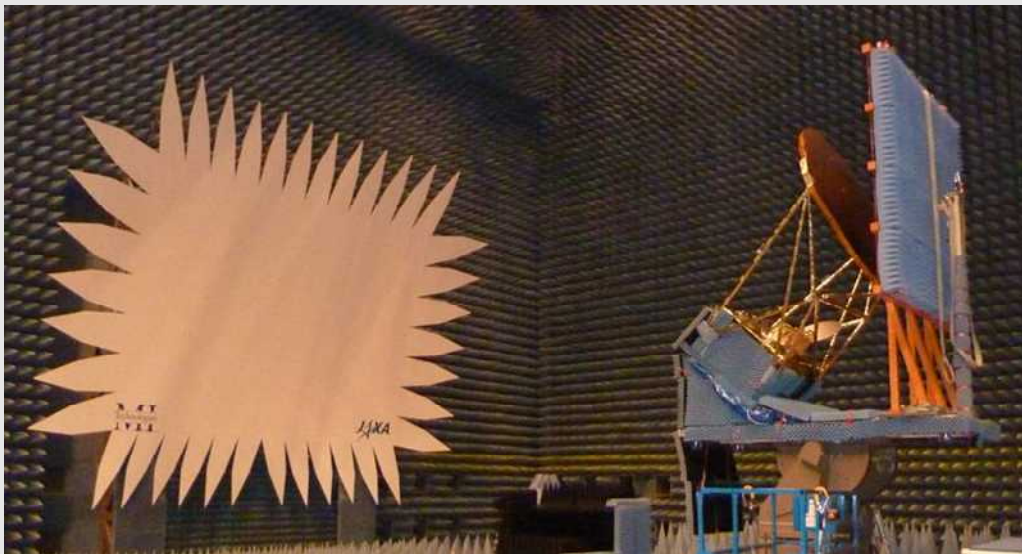
Future Works and Ground Segment

- GCOM-W1 Works until Launch
 - From July the preparation of thermal vacuum test (TVT) will start and the TVT will be performed for almost one month in August.
 - After TVT additional acoustic test will be performed to confirm the workmanship of the satellite re-assembling work. Then the final electrical performance test will be performed maybe until mid. October.
 - The pre-shipment review is planned in late October.
- Ground Segment
 - GCOM-W1 ground system is completed except L2,L3 processing software.
 - The end to end test with the satellite was finished in June.
 - The L2,L3 processing software will be completed in July.
 - The training and rehearsal will start 4 months prior to the launch.

GCOM-W1 Schedule

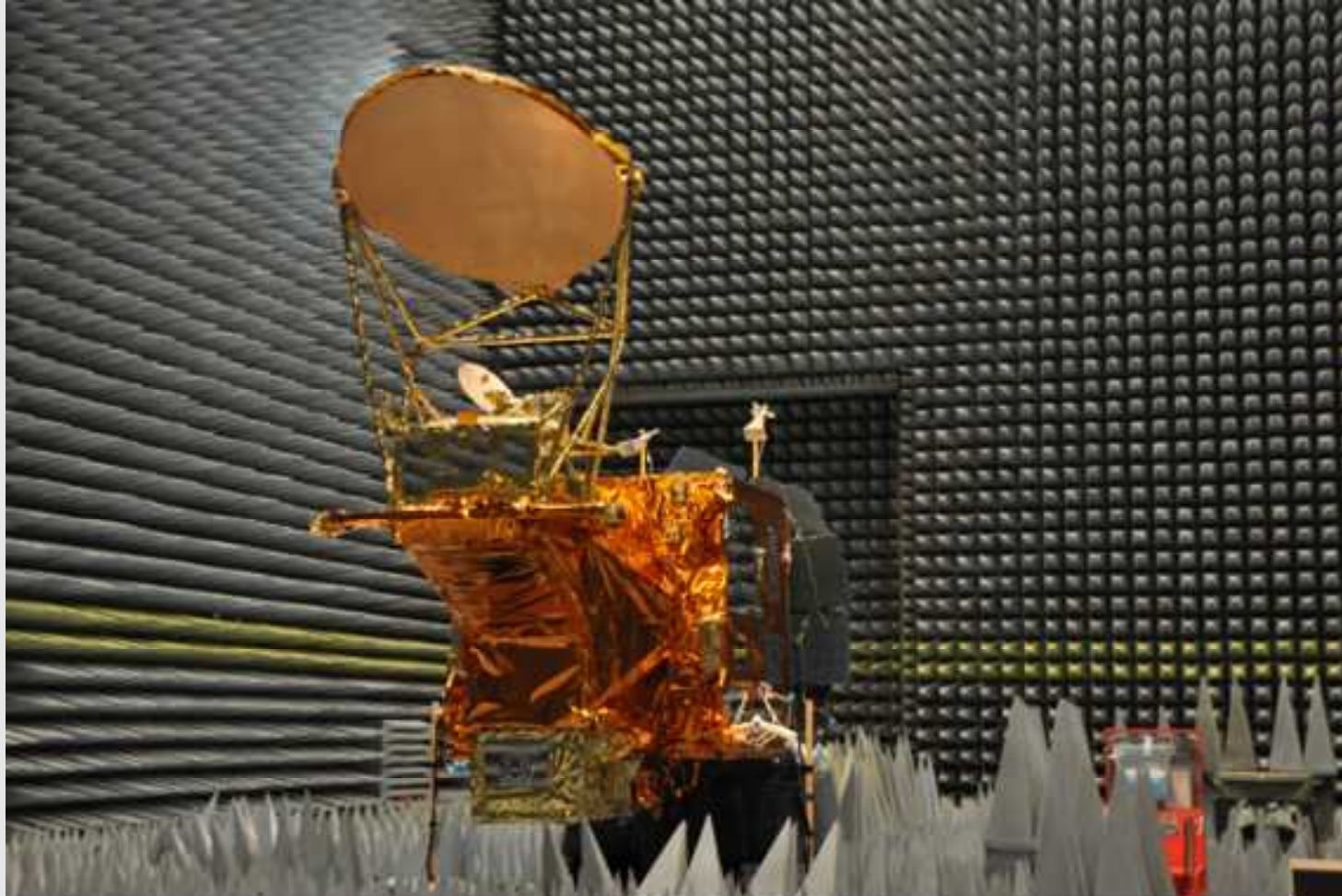


Current Status and Results



AMSR2 PFM antenna pattern measurement (6.925 GHz)

Current Status and Results



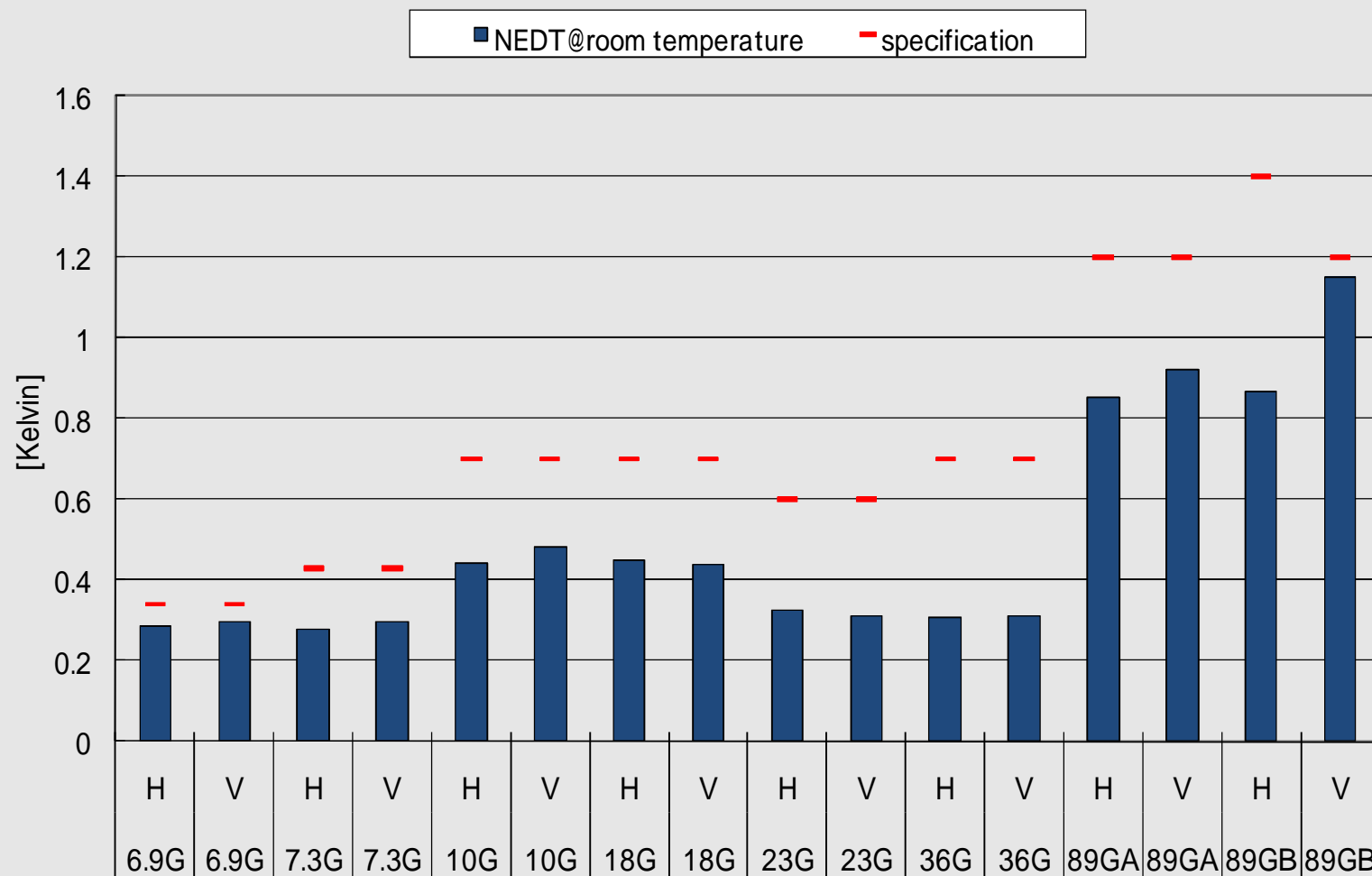
GCOM-W1 PFM EMC test

Current Status and Results



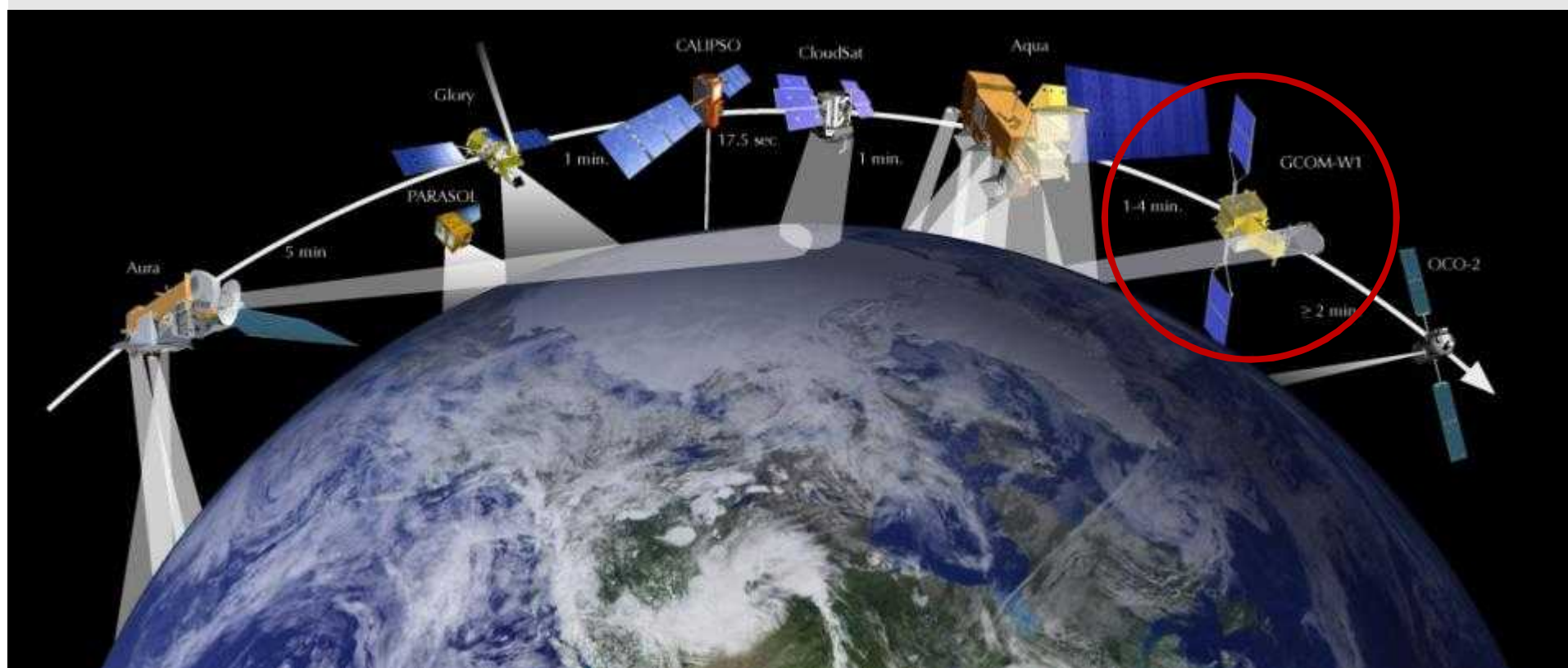
AMSR2 antenna deployment test

Current Status and Results



AMSR2 PFM NEDT measured at room temperature

GCOM-W1 in A-Train

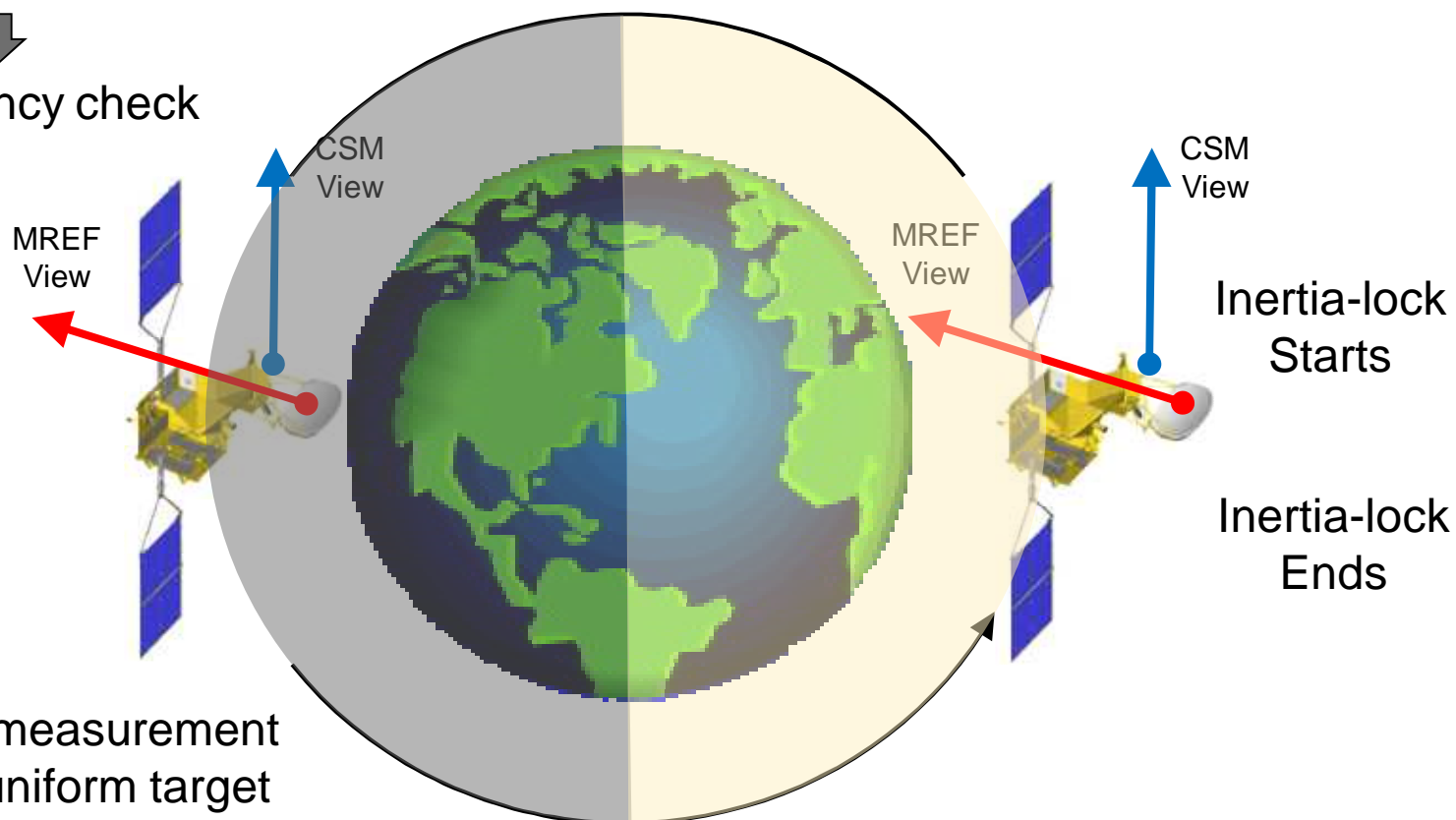


Deep Space Calibration Maneuver

Simultaneous view of deep space by MREF and CSM



Consistency check

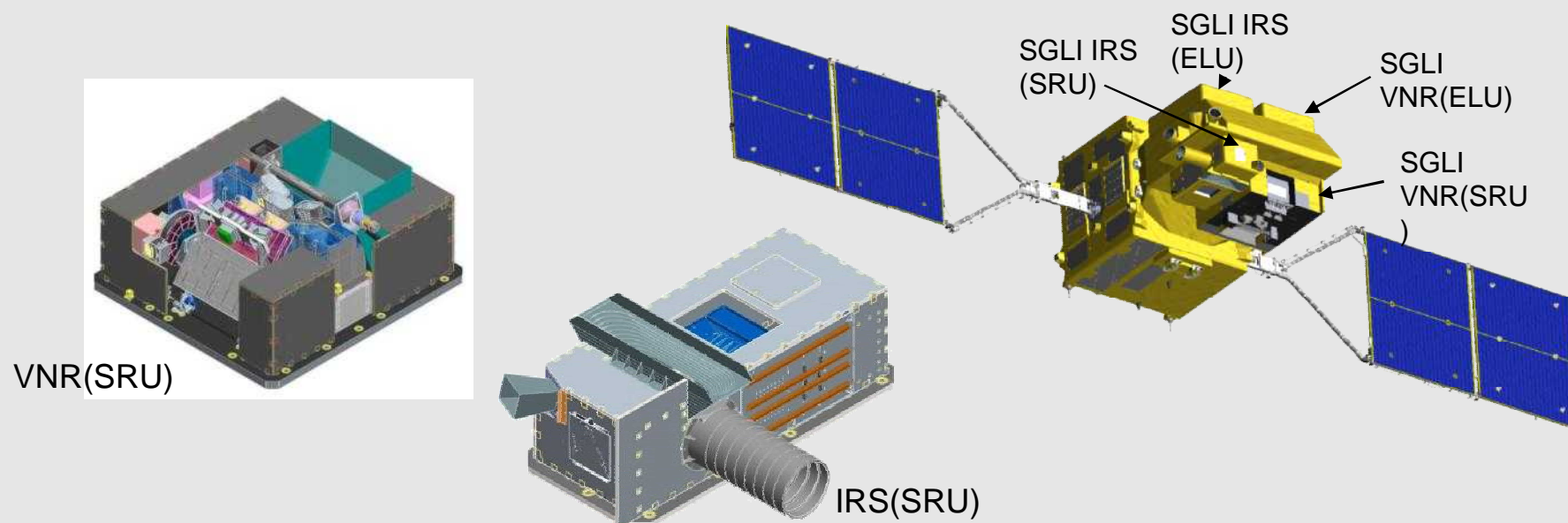


Deep space measurement as spatially uniform target



Scan bias identification

Overview of SGLI



SGLI	VNR	IRS
	Visible and Near Infrared Radiometer (Non-polarization and Polarization)	Infrared Scanning Radiometer (Shortwave Infrared and Thermal Infrared)
Spectral Channels	Non-polarization: 11CH 380-865nm Polarization(0, 60, 120deg): 2CH 670, 865nm	SWI: 4CH 1.05-2.21 μ m TIR: 2CH 10.8, 12.0 μ m
Spatial resolution	250m, 1000m	250m-1000m
Scan type	Push-broom electric scan	Wisk-broom mechanical scan
Swath width	1,150km	1,400km

GCOM-C1 Progress

- Critical design of SGLI is progressing by reflecting the results of EM test.
- Mechanical test model (MTM) of GCOM-C1 was struck by the earthquake in Tsukuba but didn't suffer from any damage. Mechanical tests are now progressing in the safe test building
- Thermal test model (TTM) of GCOM-C1 will be tested in a vacuum chamber after finishing MTM test.
- Critical design of GCOM-C1 satellite is progressing toward the critical design review (CDR).

GCOM-C1 Progress



GCOM-C1 MTM